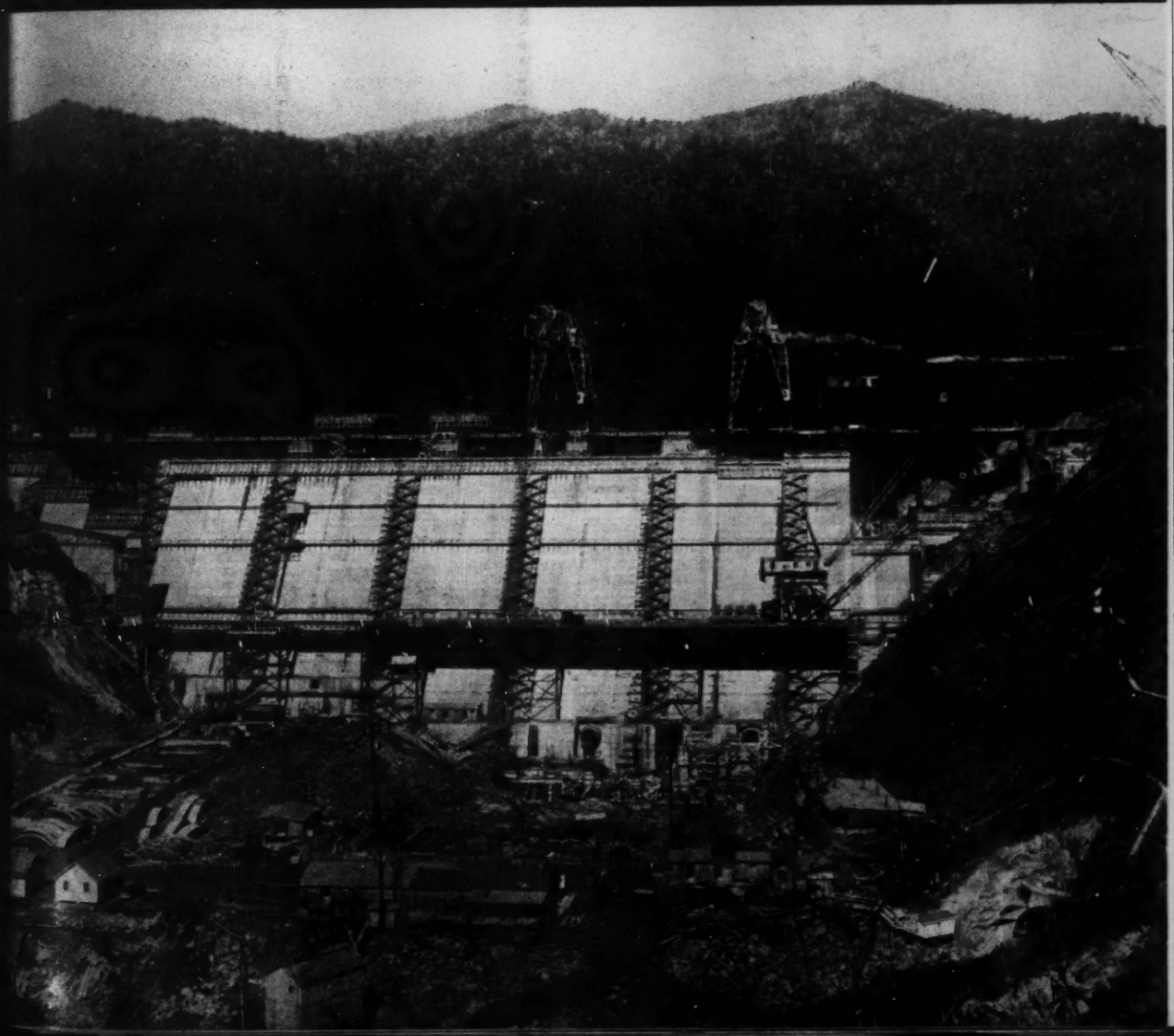
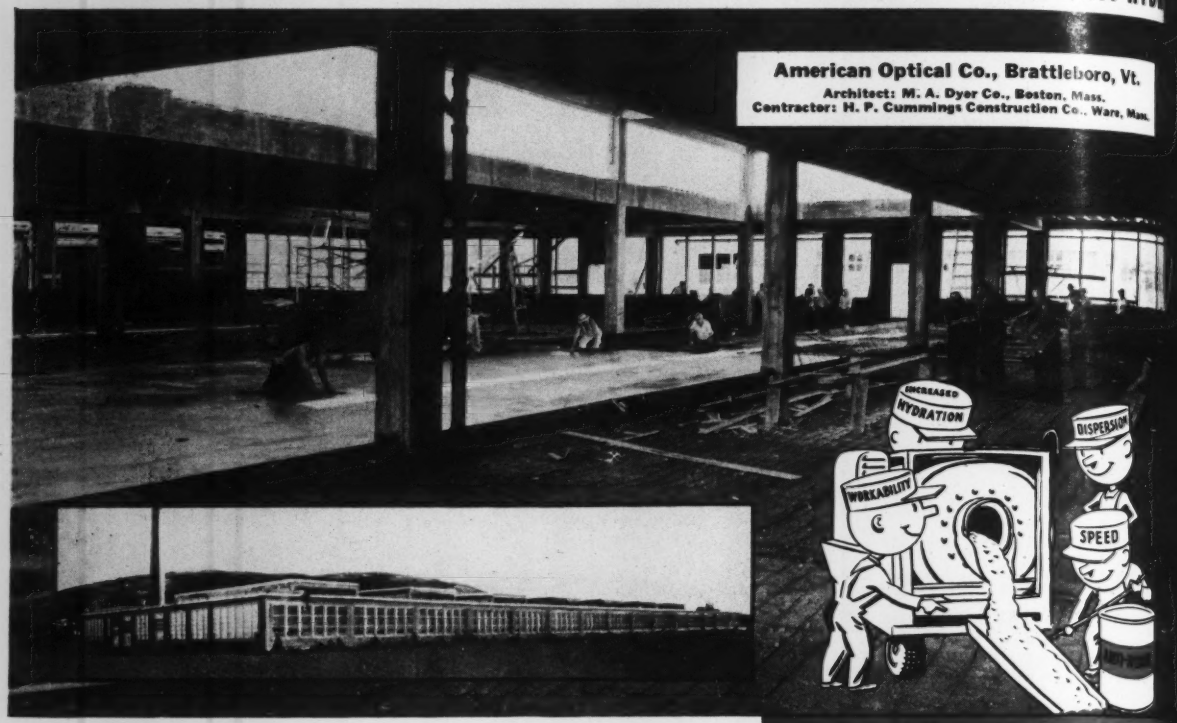
ENGINEERING NEWS-RECORD

Concreting of TVA's Fontana Dam on the Little Tennessee nears half completion



CONCRETE EXAMPL

—OF DUSTLESS FLOORS INTEGRALLY CURED AND HARDENED WITH ANTI-HYDR



DUSTLESS, OPTICAL PLANT FLOOR OPENED TO TRAFFIC IN 24 HOURS

To provide a durable, dustless, concrete floor, Anti-Hydro was used in the mix to integrally cure and harden the concrete. Thru the increased early-strength properties of Anti-Hydro with any standard brand of portland cement, floors were opened to traffic in 24 hours. Because of its 39 year service in time and labor saving, Anti-Hydro is used today in all types of concrete construction.

Increases DENSITY

Anti-Hydro, used as directed, increases hydration and dispersion of Portland cement. Increases adhesion to steel. Reduces shrinkage and voids in concrete. Cures internally, no surface cure needed.

Increases STRENGTH

Reduces water-cement ratio for specified slump (see U. S. Engineers Test). Increases early and ultimate strength with regular portland cement (see tests of independent laboratories).

Increases HARDNESS

Permits opening concrete to traffic or other use in 24 hours. Produces wear-resistant and dustless surface. Accelerates hardness; saves overtime. Cures and hardens at one time and at one cost.

Increases DURABILITY

100% impermeable concrete (Government and independent tests). Weather-proof concrete (see freeze and thaw tests). Bonds securely new concrete to old.

GUARANTEED RESULTS

A 5-year maintenance Guarantee for hard, dustless floors and waterproof concrete, based on 39 years of performance, can be furnished on Anti-Hydro gauged concrete installed under the manufacturer's supervision.

ANTI-HYDRO
WATERPROOFING CO.
265 Badger Avenue • Newark 8, N. J.
Phone: Bigelow 3-5440

ANTI-HYDRO of CANADA, Ltd.
642 Place St., Point St. Charles
MONTREAL • CANADA

NATIONALLY DISTRIBUTED by building supply dealers in all principal cities of the United States and Canada.

ANTI-HYDRO

Send This Coupon for A. I. A. Folder

Anti-Hydro Waterproofing Co.
265 Badger Ave., Dept. W., Newark 8, N. J.
Please send me A. I. A. folder on Anti-Hydro.

Name_____

Firm Name_____

Address_____

City_____ State_____

The Week In Engineering and Construction

INEERING NEWS-RECORD • NOVEMBER 25, 1943 • VOLUME 131 • NUMBER 22

ongress begins hearings n postwar planning bills

ouse committee considers legislation designed to aid tes and municipalities in advance preparation of plans d specifications for postwar construction.

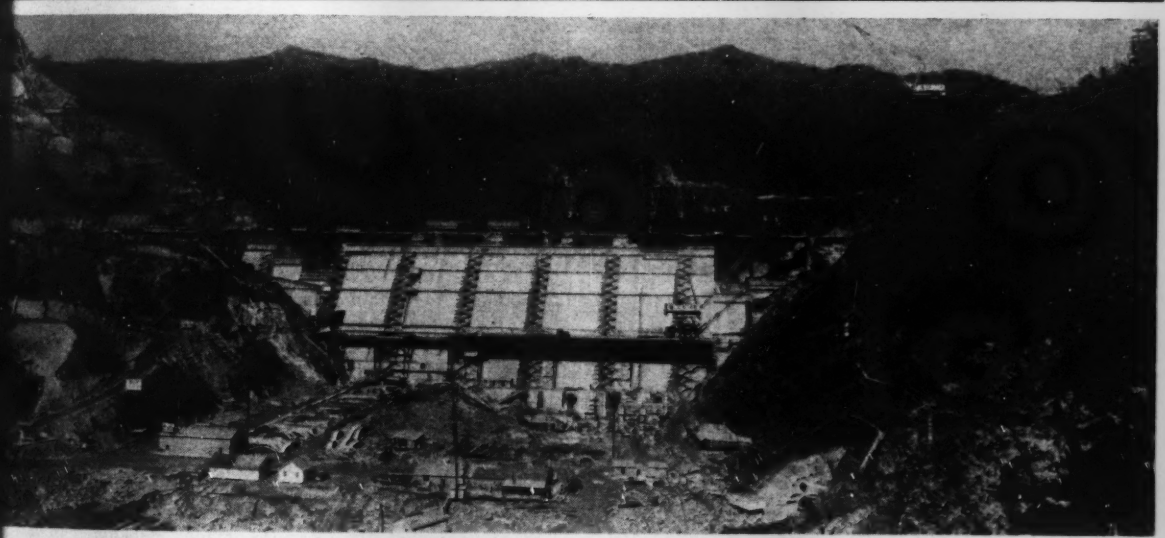
rings were begun Nov. 23, by the Buildings and Grounds Committee the House, on postwar, advance ering and construction planning, Gen. Philip B. Fleming, Federal Administrator, appearing before mmittee. Though a number of bills rizing appropriation of funds for s and specifications are awaiting ressional action, it seems likely that hearings, some new legislation may posed which will include the most cal features of present bills. Besides pending bills, some legislation has already been enacted, under which government agencies are now preparing actual plans.

Pending bills include Senator Thomas' S. 1137 and Representative Lynch's H. R. 2783, with identical provisions for allotting an authorized $85 million in grants and loans. Of this amount, $10 million would be appropriated annually for outright grants to states and their subdivisions for "establishing and supporting agencies to prepare, revise, and maintain comprehensive plans and programs." It would be apportioned on a 50 percent area, 50 percent population basis (*ENR*, April 1, p. 449; May 27, p. 769). The $75 million would be used "for advances by the President, through such existing federal agency or agencies as he may designate, ... for the making of such examinations, surveys, investigations, and architectural and engineering plans and specifications," the amounts later to be repaid when funds become available for construction of the work planned. Application for these loans was to be made through the National Resources Planning Board, which has now been liquidated.

A bill, introduced by Senator Mead (S. 846), though similar in most respects to the Thomas and Lynch bills, leaves out the NRPB. Furthermore, it provides for a $25-million fund, instead of $10 million, and omits the provision that the amount be appropriated annually. It also specifies that states contribute one-fourth of the cost of certain features of planning.

Another bill, H. R. 3058, introduced

(*Continued on following page*)



Fontana Dam concreting nearly half completed.

Tennessee Valley Authority Fontana largest and highest concrete structure the Rockies, is rising at the rate of cu-yd. per month. About 1,500,000 of concrete had been placed to Nov. 1 dam reached the second of three con- trestles from which nearly 3,000,000 of concrete will be placed by this time ar.

Concrete in the lower part of the dam and in the power house is placed by a 40-ton revolving crane. On the main low-level trestle two revolving cranes and two hammerheads are now placing concrete to a level where the high level bridge can be erected. The hammerheads will then be raised to the high-level bridge to complete concreting to the crest, about 42 ft. above the bridge deck.

The dam, on the Little Tennessee River in western North Carolina, will be 460 ft. high and will store 4,570,000 acre ft. of water. An initial installation of two 67,500 kw. generators is to be supplemented by one more unit.

Work is being done by TVA's own forces under Fred C. Schemmer, project manager; Oren Reed, construction engineer; and G. E. Murphey, superintendent.

by Representative Maas of Minnesota, authorizes an annual appropriation of $25 million to be allotted to municipalities on a 50 percent population, 50 percent area basis, for construction and repair of public buildings such as city halls, fire halls, schools, hospitals and courthouses; airports, waterworks, and sewage disposal plants. Appropriations would continue till six months after the war. Half of engineering and other costs would be borne by the municipalities.

Postwar highway plans

Money in the amount of $60 million, provided for in two acts, is already available for refund to states, for post-war highway planning (*ENR*, May 13, p. 709; July 22, p. 174). This includes $50 million in regular federal-aid funds, and $10 million by the Highway Act of 1941. Both sums are available on a 50–50 matching basis, and in neither case are they to be refunded.

Though the Public Roads Administration, which administers these funds, has received various letters of intent, only two states have actually submitted definite programs. They are New York, with a program for which the federal government will pay $411,000 as its one-half share of the cost of planning, and Vermont, which has submitted a program for which the government's one-half of the planning cost will amount to $46,550.

Officials of the PRA believe the reason the states have been slow in submitting their programs is that the small amount of construction work that has recently been put under way leaves them with plenty of money to cover cost of plans, and so they are in no hurry to be reimbursed for the government's one-half share of cost. The money becomes available for reimbursing highway departments after the plans are complete, or may be paid on a monthly basis as plans proceed.

This is true also of the $10,000,000 fund which has been available for highway planning since 1941. Of this amount, programs have been submitted to PRA in an amount of $5,658,000, and allotments have been made amounting to $3,507,000.

Funds for river work

Under the War Department's Civil Functions Act, the sum of $6,000,000 is available to the Corps of Engineers for planning, the amount to be equally divided between river-and-harbor, and flood-control projects (*ENR*, April 8, p. 466). This money is available from unobligated balances as of June 30, 1943, for projects authorized, or to be authorized, by Congress, and is to remain available until expended.

Though censorship prevents designating the specific river-and-harbor projects, plans and specifications are known to be worked out for many scattered throughout the United States.

Flood control

In the case of plans for flood-control work, all of the $3,000,000 has already been allotted, and district engineers are now busy with plans and specifications, which in some districts are practically finished so far as the preliminary stages are concerned. Though the $3,000,000 is said to be sufficient for plans for this year, the flood control branch of the War Department has indicated that more funds will be required for next year's planning.

• • •

Los Angeles-Long Beach harbor work resumed

As a result of revocation by the War Production Board of its earlier stop-order, work is to be resumed by the Corps of Engineers on the Los Angeles and Long Beach, Cal., Harbors project, including dredging at the mouth of the Los Angeles River, and additional construction of the breakwater. The composite-type breakwater was approximately one-half completed at the time work was stopped. The work which is now to be permitted will be merely sufficient to protect the core and certain covering stone already in place. This is expected to cost $170,000.

• • •

WMC modified use of scientific roster

New regulations intended to obtain more effective use of the services of scientific and professional men of military age who are deferred from military service have been issued by the War Manpower Commission. The regulations change the manner in which Selective Service boards determine the essentiality of work on which engineers and others registered with the National Roster of Scientific and Specialized Personnel are engaged. They also apply to changes in employment by such men of military age and young graduates in science or engineering who have not been drafted.

The new regulations are embodied in Regulations No. 4 and 7 of the War Manpower Commission and in Selective Service Local Board Memoranda 115, 115B and 149. Copies can be obtained from local draft boards or from the Roster of Scientific and Specialized Personnel, War Manpower Commission, Washington, 25, D. C.

• • •

Truman committee says "Plan public works now"

A report of the Truman Committee of the Senate outlining problems of conversion from war production contains this statement:

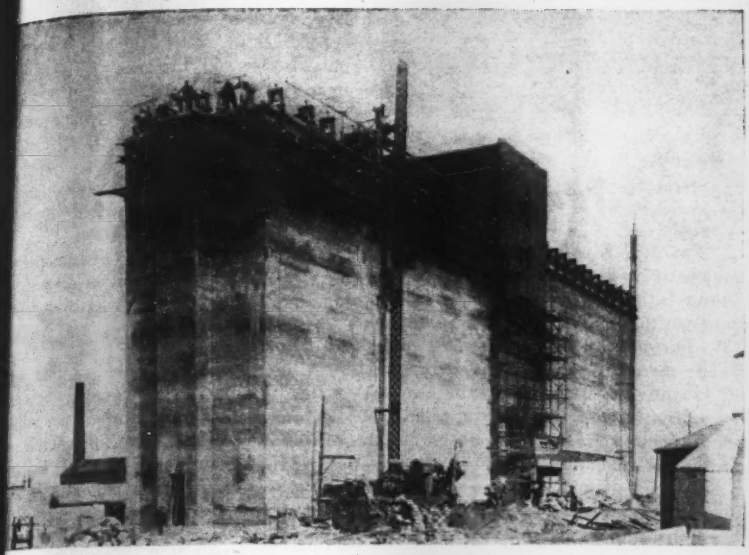
"It is important that the state and local governments give consideration now to programs for the construction of public works, such as highways, schools, slum clearance, and sewer and water projects. These projects are of second importance when compared to those of private industry for the production of consumer goods. The latter are essential to a sound economy, but public works projects, if planned now, can be undertaken immediately after the termination of the war, and would provide cushion jobs until private industry is able to get into production."

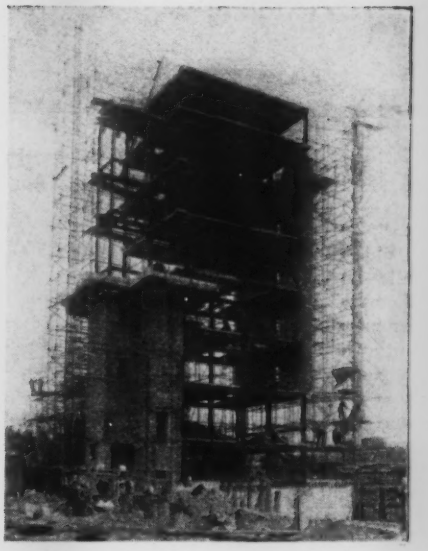
The problem of conversion

The report emphasizes that any progress which can be made in turning from wartime to peacetime industrial activity before cessation of war "will lessen the problem of converting industry from war to peace."

"This situation will be especially acute in the housing industry, where prefabrication and the use of new materials have an opportunity to revolutionize housing with the result that every worker in the United States would have an opportunity to have improved housing for his family," the report continues. To do this, however, it will be necessary to revise some municipal building codes and some of the conditions under which the building trades operate. If possible, such revisions should be made by the building trades themselves, so as to protect all the rights of labor and, at the same time, to enable them and all other laborers to have better housing. If progress along these lines can be made, housing can become a great industry, particularly useful in providing jobs during the period of conversion from wartime industry to peacetime production."

ENGINEERING NEWS-RECORD. Published every Thursday. **Return postage guaranteed.** Vol. 131, No. 22. Price 25c per copy. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 99-129 N. Broadway, Albany, 1, N. Y., or 330 W. 42nd Street, New York, N. Y. Subscriptions, United States, U. S. Possessions and Latin American Republics, $5.00 for one year, $8.00 for two years, $10.00 for three years. Canada, $5.00 for one year, $9.00 for two years, $11.00 for three years. Great Britain and British Possessions, 54 shillings for one year, 108 shillings for three years. All other countries, $8.00 for one year, $14.00 for two years, $18.00 for three years. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in U.S.A. Cable Address: "McGrawhill New York." Member A.B.P. Member A.B.C. Copyright 1943 by McGraw-Hill Publishing Company, Inc. James H. McGraw, Founder and Honorary Chairman; James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President; Mason Britton, Vice-President; Curtis W. McGraw, Treasurer; Edward A. Gerardi, Secretary; J. E. Blackburn, Jr., Circulation Manager. **Publication office: 99-129 North Broadway, Albany, 1, N. Y. Editorial and Executive Offices: 330 West 42nd St., New York, 18.** District Managers and Branch Offices: Fred G. Hudson, 520 N. Michigan Ave., Chicago; J. W. Otterson, 68 Post St., San Francisco; Aldwych House, Aldwych, London, W. C. 2, England; Washington; J. M. Spackman, New York; A. B. Cozzens, Philadelphia; E. E. Duff, Jr., Cleveland; B. F. Horn, Detroit; Richard Y. Pike, St. Louis; R. N. Phelan, Los Angeles; J. I. Ballard, Boston; Ralph Maultsby, Atlanta, Ga.





First grain drying silos in England under construction

The war has given England her first grain ing silos. A standard design was drawn up the Ministry of Works, and fifteen of these s are now being erected in various parts the country to meet the following require- nts: (1) Total intake from road and rails, 40 s per hour; (2) drying capacity, from to 16 percent, at 10 tons per hour; (3) al storage capacity, 5,000 long tons; (4) pacity of each bin, 200 long tons, to allow least one bin to be turned within 24 hr.; (5) railroad facilities for a 20-truck loading-out capacity.

Under the "central working house plan" adopted for the standard silo, intake, drying and sacking-off operations are kept within a small area to reduce supervisory labor.

Conveyors run from the central tower over and under the storage bins.

Specifications require the foundations to carry a superimposed load of about 9,000 tons over an area of 30 x 210 ft., and loading varies with continuous shifting of the grain.

The central working house is structural steel, while the bins or silos are of reinforced concrete, built with sliding forms. A complete set of twelve bins has been erected in as short a time as six days.

About 40 men are required on each nest of twelve bins, the gangs and shifts being arranged so as to permit uninterrupted work for 144 hr. in daylight and under blackout conditions after the pouring of the concrete has begun. About 2,000 long tons of concrete go into each silo plant.

Extensive road building for British Columbia

The province of British Columbia, nada, on account of its strategic loca- n and great potentialities for future velopment, is doing and planning ch highway construction work—a total perhaps $210,000,000 is involved, ac- rding to estimates of Herbert Anscomb, inister of Public Works.

Included in this estimate is the pro- sed $24,661,100 Northern Trans-Pro- cial Highway the completion of which expected to increase greatly the eco- mic and industrial well being of the ea.

The section of the Northern trans- ovincial highway between Prince Ru- rt and Hazelton is already under con- ruction by the Department of Mines d Resources.

There still remains to be built a sec- on between Hansard and McBride, also e from Prince Rupert to Jasper. It is gured there are 739 miles to be built tween Prince Rupert and Yellowhead a cost of approximately $21,897,000; 5 miles between Terrace and Aiyansh, sting $1,801,800; and 55 miles between urns Lake and Wistaria, at an esti- ated cost of $762,300.

The British Columbia-Yukon-Alaska Highway also has been given much consideration by the department, and its construction may be an accomplished fact before the war is over. It is covered in the proposal, at a cost of $23,709,300, including 337 miles from Vanderhoof to Fort St. John, and 526 miles from Prince George to Watson Lake.

• • •

A third through highway opposed in Connecticut

Some residents of the Riverside section of Greenwich, Conn., most of them commuting New York businessmen, are up in arms about the state's proposal to add a third highway to the Boston Post Road and the Merritt Parkway which cross Fairfield County from the Housatonic River to the New York State line. If the road goes through Riverside, Town Assessor Clifford R. Wilmot says tax exemption on state acquired property and depreciation of property values along the route would reduce the Greenwich assessment list by $15,000,000.

State Highway Commissioner William J. Cox says there will be a tremendous increase in traffic after the war and that it can be handled adequately only if there are extra facilities.

Los Angeles sewer plans opposed by citizens league

Recommendations of the Los Angeles Citizens Sewage Disposal League and its objections to previously accepted plans for solution of the city's sewage problems have been filed with the Board of Public Works and City Council. The league comprises individuals from Los Angeles and 13 other cities affected.

Use of the activated sludge process for sewage treatment, instead of the accepted sedimentation and flocculation process, was proposed on the ground that operation would be cheaper and more efficient.

The league also suggested removal of treatment plants from the shoreline to avoid "defiling" the beaches and to avoid transportation of untreated sewage through outfall lines for distances up to 55 miles.

Officials contended several small treatment plants, instead of a single plant at Hyperion, could be constructed with a net saving of funds.

Major points of the league program were for establishment of a metropolitan sewage district, to share expenses and management among communities involved, and a study of sewage disposal needs by an outside engineering firm.

Letter from LATIN AMERICA

By Edward J. Cleary
Managing Editor, Engineering News-Record

Rio Doce Valley, Brazil: About 225 miles northeast of Rio lies the seaport of Victoria, which was the starting point for my journey up the Rio Doce Valley to the fabulous Itabiri iron mines. I use the term "fabulous" because here I was to see what is part of one of the largest and purest deposits of iron to be found anywhere in the world—13 billion tons of ore that averages 68.5 percent ferric oxide!

But a visit to the iron mines was not my sole objective. This operation is only one of the elements of a regional development project in which the United States government is cooperating with the Brazilian authorities. From the valley of the Rio Doce are coming many strategic materials to further the war effort; iron ore for shipment to Great Britain figures most prominently, but mica and rock crystals for our radio manufacturers are likewise important contributions.

And then I had an opportunity to see some of our North American engineers at work—the firm of Parsons, Brinckerhoff, Hogan and MacDonald, New York, who are consultants on railroad reconstruction, mining and port installation operations has a large staff here, and the Office of the Coordinator of Inter-American Affairs has assigned engineers to health and sanitation projects throughout the valley.

"Rover Boys on the Rio Doce"

All these activities will be detailed in an article later on. What I want to tell now are some of the things that never get into articles, namely, the adventures of the "Rover Boys on the Rio Doce."

Like the Rover Boys in fiction, we were three brothers—brothers of the pen, that is. There was Ralph Ross (the oldest and wisest), director of press activities in Brazil for the Coordinator's Office; Reuben Braga, a Brazilian journalist (the fun-loving fellow), and yours truly (the serious member of the group). I reserve the latter designation for myself on the basis of a remark made by Braga.

Said he complainingly to Ross when we had finished an arduous week's journey and had gone out for an evening of relaxation, "Senhor Cleary can find time to spend only 20 minutes in this beautiful gaming casio, but he seldom took less than two hours to photograph and make notes on every new privy that the sanitary engineers were building in the valley." I'm still wondering if this was intended to be complimentary.

Through the courtesy of Sam Marshall, formerly chief engineer of the Pennsylvania Turnpike Commission and now resident manager of Parsons, Brinckerhoff, Hogan and MacDonald in Brazil, the Victoria-Minaes Railway supplied us with a special car that had observation facilities and sleeping compartments. This car was hooked onto the rear of an ore train each night, after we had completed inspections, and after four nights of the wildest, bumpiest riding imaginable, during which I spent most of the time picking myself up from the floor and trying to stay in a berth, we reached the mines.

Another special car—the mobile laboratory and dining unit used by the sanitary engineers on the project—also accompanied us. Except for the first night out, when it was discovered that somebody forgot to stock the car with food when it left the yards at Victoria, we got along famously.

With the sanitary engineers and doctors, who also were making an inspection, the party now numbered ten. Our cook was a little colored fellow named Manuel, and how he managed to prepare three meals a day for ten men whose appetites were nothing short of voracious, using only a one-burner gasoline stove, was one of the minor mysteries of the Rio Doce Valley. Figure it out if you c

In addition to cooking the food, Manuel also served the meals (resplendent in a gold-braided uniform that the engineers bought), supplied cooling drinks as required, made up beds and cleaned the car. Not understanding a word of English, he took particular delight in the fact that the engineers had ironically dubbed him "Lucky" Manuel.

He deserves at least to be immortalized in a poem, as was that other devoted and uncomplaining man of color, Gunga D

Approaching Itabirl, and one of the mountains, which is virtually pure iron.

Tonic water for malaria

Although nobody told me that tonic water (a local, carbonated beverage flavored with about one part per million of quinine) might serve for malaria prophylaxis, I reasoned that if I drank enough of this stuff it might build up a quinine residual in my system. In this analysis I received the whole-hearted support of Ralph Ross, whose opinion, by virtue of being the oldest and wisest member of the "Rover Boys" were highly regarded.

Thus, when we reached the swampy areas of the valley, where mosquito control work was underway, I began to fortify myself. This experiment was such a grand success that I didn't even see an *Anopheles Darlingi*, let alone feel one. Therefore, I'll pass on the recipe for this superb health drink: Fill a tall glass with cracked ice, cover the ice with tonic water, add about two jiggers of gin (or enough to "kill" the quinine taste), and sip slowly; repeat at frequent intervals.

• • •

Ship companies sued for damage to Chicago bridges

Damages totaling $25,000 are being sought by the city of Chicago in lawsuits filed recently in Superior Court as a result of three bridges over the Chicago River being struck by passing vessels. Four Chicago companies are named defendants as owners of the ships. In all three cases the companies are charged with negligence and operating at excessive speeds.

• • •

Self-propelled concrete ship launched at Tampa

America's first self-propelled concrete cargo ship, the David O. Saylor, completed its first trial run Nov. 16 near Tampa, Fla., and was accepted by the United States Maritime Commission. members of the trial board announced. The ship, built by McCloskey & Co. shipyard, was put through all of the tests given a steel ship, officials said.

The special construction basins of thin concrete for building these concrete ships at Tampa were fully described in *ENR* July 15, 1943, p. 152.

...rge cantilever bridge ...mpleted in India

...e new Howrah Bridge at Calcutta ...recently opened to traffic, according ...n item in the Oct. 22 issue of *The ...neer* (London). This great bridge, ...e 1,500 ft. span makes it the third ...st cantilever structure in the world, ...es a 71-ft. roadway, and two 15-ft. ...walks, across the Hooghly River. ...roadway is suspended beneath the ...es of the main span, but does not ...d along the anchor arms, instead ...g supported on trestles that turn in ...r them to reach the bridge deck at ...main piers. The cantilever arms are ... 468 ft. long and carry between ... a suspended span 564 ft. long. ... anchor arm has a length of 325 ft. ...engineers of the bridge were Rendel, ...er and Tritton, of Westminster, and ...contractors the Cleveland Bridge & ...neering Co., Lt. The superstructure ...erected by two traveling cranes de...d to creep along the upper chords ... of the anchor arms, then of the ...levers, and finally of the suspended ... building out the structure before ... Work upon the bridge was begun ...re the war.

• • •

...onsulting Engineers ask ...ss federal competition

...o resolutions adopted at the recent ...d meeting of the American Institute ...onsulting Engineers, and forwarded ...ongress, call attention to federal gov...ent engineering trends that are con...ed to be unsound and not in the ...ic interest. One relates to the Kil... and Patman bills, S. 702 and H.R. ... that would set up an Office of ...tific and Technical Mobilization, ... the other is concerned with the ...nt use of federal employees as con...nts to foreign governments.

... Office of Scientific and Technical ...lization, with large powers in the ... of science, research and engineer... bears resemblance to agencies "used ...overnments in Fascism and National ...lism," according to the Consulting ...neers. They point out that the effect ...ch an office would be to disrupt the ...nt highly successful methods of ...tific and technical research, and to ...en private and individual initiative. ...these reasons, the Institute is op... to the passage of the proposed bill. ...th respect to the employment of fed... engineers in foreign countries, the ...ution points out that the Public ...s Administration is surveying and ...aring to supervise the construction ...ads in Bolivia; that the Tennessee ...y Authority is assisting in the de... and construction of hydroelectric ...s in Russia; and that other bureaus ...agencies of the federal government are increasingly carrying on more outside engineering work, both at home and abroad. Since such services of our federal bureaus to foreign countries, the resolution states, are normally not essential, due to the ample facilities available from engineers in private practice, the Institute regards it as inadvisable, improper and not in the public interest for the federal government to tax the public to pay its employees for doing work in foreign territory outside of their regular duties, which work consulting engineers are qualified and prepared to do.

• • •

Franklin D. Furman dies, Ex Stevens Institute dean

Franklin De Ronde Furman, 73, author of technical and historical books, who had been on the faculty of Stevens Institute of Technology for forty-eight years and served for thirteen years as dean of the college, died at Passaic, N. J., Nov. 20.

Dean Furman was graduated from Hasbrouck Institute, Jersey City, in 1888, and as a mechanical engineer from Stevens in 1893. He had been instructor and assistant professor before he was appointed Professor of Mechanism and Machine Design. He became dean of the college in 1928, and had been dean emeritus since 1941.

His books included the "History of the Stevens Family of Engineers," "History of Stevens Institute of Technology," and "Biographies of Alumni of Stevens Institute."

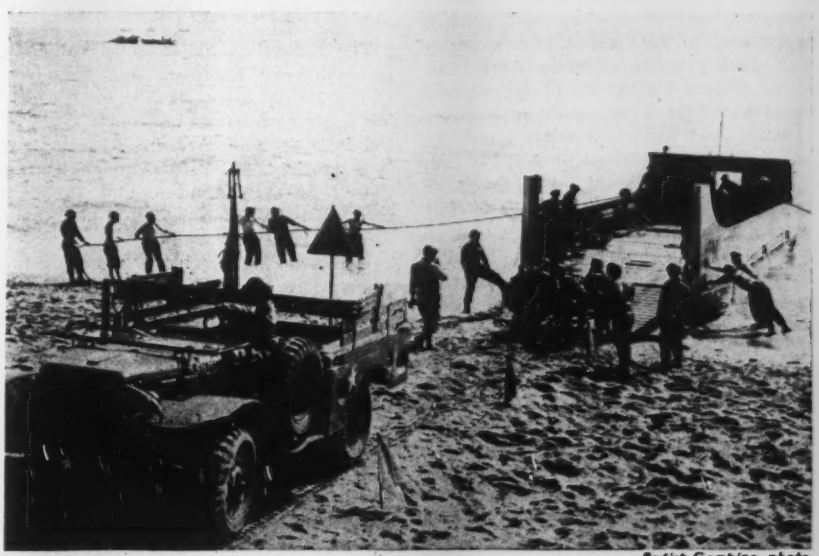
• • •

Contractor exonerated in Houston labor case

Following a hearing by the tripartite panel of the Wage Adjustment Board of the WLB on the strike of 1,000 A.F. of L. building trade craftsmen, employed on the construction of the $20,000,000 Sheffield Steel Corp. plant at Houston, Tex. (*ENR* Nov. 4, p. 661), the panel recommended dismissal of the complaint against Arthur G. McKee & Co., the principal contractors on the project. The Houston Building Trades Council had charged that the McKee company was responsible for the labor policies of the W. S. Bellows Construction Co. whose hiring of 30 non-union laborers caused the work stoppage.

The WLB panel considers the Bellows Co. the other party in the dispute instead of Arthur G. McKee & Co., but will take no action against it unless the labor organizations file a formal complaint.

This is said to be the first labor case to be dealt with according to the new streamlined procedure for quick action in labor controversies as worked out by the War Labor Board and its Wage Adjustment Board.



British-Combine photo

Americans and British combine on invasion training

The above picture of landing craft exercises is given added significance by the statement this week of Lt. Gen. Jacob L. Devers, American Commander in the European Theater, that large numbers of persons are being evacuated from areas in southwestern England to provide room for invasion rehearsals. This week, also, press censors in London permitted a United Press correspondent there to cable that our Army Engineers, as well as Britain's Royal Engineers, have built replicas of German coast defenses, which will be stormed and destroyed as a part of the exercises. These Assault Training Centers, as they are called, have required much large-scale construction. That they are now ready for use is another indication that invasion plans are progressing rapidly.

American Road Builders Association stresses value of road repair now

Many thoroughfares are deteriorating fast under heavy wartime traffic, but highway departments are making the most of limited manpower and material.

In a report on the present condition of our highways, Charles M. Upham, engineer-director of the American Road Builders Association, says that restrictions on new roadbuilding except that needed to serve army camps and war industries mean that every possible effort must be made to keep existing highways in usable condition. Although the tire and gas shortage has reduced pleasure driving, Mr. Upham said, this is more than offset on most important highways by the increase in heavier traffic induced by the war and by buses carrying passengers who formerly used light cars.

Streets wearing out

"In some congested war production areas, street surfaces have become so badly worn that traffic is rerouted over other streets which, it is feared, will soon show equal deterioration. Some roads that have suddenly become essential to the constructing and servicing of new war plants were never intended for heavy traffic and are deteriorating rapidly. The rural road maintenance problem in some sections has been greatly aggravated by the opening of new mines and other projects in areas having no railroad facilities and no high type surfaced highways. The resultant increase of traffic over secondary roads is said to be causing rapid deterioration.

"These war-traffic highways must be kept in serviceable condition. The time is rapidly approaching when output of war materials will be limited not by ability to manufacture them but by the rate at which raw materials, parts and accessories can be gotten to the plants and the completed products removed from them. With a plant turning out a hundred truckloads of products a day, temporary storage usually cannot be found for many days' output. If it cannot be removed promptly, the plant must slow down or shut down temporarily. Moreover, main highways must be kept in condition at all times for the use of mechanized troops.

Loss of personnel

"Loss of personnel is one of the most serious problems brought by the war to the highway departments. Declines in maintenance personnel have, in fact, reached a national average of 33 percent of normal. While this situation makes the task much more difficult, it is imperative that it not be neglected. It is, in this connection, particularly interesting to note how Oregon solved the problem. According to the state maintenance engineer, 'Restrictions placed on critical materials and shortages of manpower were met by substitution of less critical grades of material, by increasing working hours to 48 hours per week and by hiring women for certain jobs.'

"Despite the many handicaps, state, county, city and local highway agencies are doing a splendid job of making the best use of limited manpower and materials. Yet highway depreciation is so great that actually when this war ends the highways will be far less adequate for the traffic than they were before the war.

"Inescapably, after the war, all highway agencies will have to double their construction and reconstruction programs, just to bring the highways back to their 1941 condition."

• • •

FPHA wants buildings converted for war housing

The Federal Public Housing Authority is looking for architects and engineers with a special ingeniousness for converting large commercial and other types of buildings into war housing projects, and it is particularly desirous of contacting those who are willing to find, by their own initiative, buildings not in use which are adaptable to conversion.

The need is limited to war industry areas where housing is still inadequate, and to improve which, the National Housing Agency had, as of Oct. 30, programmed 39,519 units. The largest number is scheduled for Region 5, where over 9,000 units are to be contracted for in the States of Michigan, Ohio, Kentucky and West Virginia.

It is the responsibility of FPHA to provide the housing programmed by NHA. Insofar as possible, it will fulfill requirements by means of conversions, because of the savings over new construction in time, critical materials and cost. The remainder of the program will have to be made up of new construction.

FPHA regional directors, whose job it is to locate convertible buildings, take bids and award contracts, rely largely upon architects and engineers to find structures adaptable to conversion. Suitable structures are reported to regional directors, either of NHA or FPHA. Col. F. Charles Starr, director of the conversion division of FPHA, states those who bring to the attention of rectors structures which prove accepta for conversion are first in line for ass ment to work on these projects.

In the case of practically all con sions, the services of an engineer as as those of an architect are needed, the plumbing, heating, lighting, structural problems involved are m complex than those which architects ordinarily equipped to handle, accord to Col. Starr who, himself, is both architect and an engineer.

Suitable locations

Location preferences of buildings scribe that structures be near either plant where tenants are to work, or adequate transportation facilities; that they be near a shopping and mar ing center, eating places, theatre other opportunities for recreation. purposes of economical development, building or its wings should not be m than 60 feet wide; and it should not a firetrap in itself or be located adjac to a fire hazard. It should, of course, structurally sound. Sixty-five square of floor space is the minimum permis per person, in conversions, in comparis to approximately 75 required in n construction.

Types of buildings which in the p have been converted to housing incl office buildings, hotels, schools, dor tories, mills, exceptionally large r dences, warehouse and factories.

Government conversion is made eit upon purchase or by seven-year le

• • •

Shipbuilding activity at Superior-Duluth, Wis.

On Dec. 1 the Walter Butler Sh builders, Inc., of St. Paul, Minn., take over the facilities and operation the Barnes-Duluth Shipbuilding Co., Maritime Commission has announced.

The Butler organization, with th yards in Superior, Wis., began its sh building operations in December, 19 on land that was then the city dum The company later acquired the facili of the Lake Superior Shipbuilding and the adjacent Lehigh coal docks.

The company now holds contracts about 60 ocean-going vessels, assuring uninterrupted flow of work for the of these yards. Butler Company offi indicated that the present work w would be boosted to 5,000 men.

The Superior yards have delivered ocean-going vessels, at an average rat one every 27 days, and an unspecif number of frigates to the Maritime C mission. The company's yards in Super are now completing an original cont for 12 frigates and have started work a contract for 28 Victory cargo vessels

MEN AND JOBS

William H. Bertram has been appointed chief engineer of sewers of the Borough of Queens, New York City. The borough has a postwar building program of $15,000,000.

Lt. Col. J. H. Anderson has been appointed district engineer of the Galveston, Texas, District, United States Engineers, succeeding **Col. Wilson G. Saville**, who has been ordered to Camp Claiborne, La., for specialized training. Lt. Col. Anderson has been serving as executive engineer of the Middle Atlantic Division of the Corps of Engineers with headquarters in Baltimore, Md. **Lt. Col. Frank H. Newman** is acting district engineer pending the arrival of Col. Anderson.

William C. Jones, formerly with the Alabama Highway Department, is now assistant Montgomery county engineer. He will fill a vacancy caused by the death of W. M. Farrow, assistant engineer for many years.

J. B. Stuck, Bloomfield, Ia., former county engineer for Davis County, has resigned and has been succeeded by **Herbert** , the former assistant county engineer.

L. A. Young, formerly with the Kansas state board of health, has been commissioned a major in the Engineering Section, Division of Health and Sanitation office of the Coordinator of Inter-American Affairs, with headquarters at Bogota, Columbia.

William A. Reetz of West Branch has been appointed to succeed the late Stewart Montgomery as a member of the Ogemaw, Mich., County Road Commission.

C. J. Rogers has been appointed Jefferson County, Ala., engineer. Mr. Rogers has been connected with the county engineering department, and was head of the department under a former administration.

Lt. William Kenneth Heron, of the Royal Canadian Engineers, was awarded the Military Cross in the Sicilian campaign.

Harry L. Brightman, who has been employed by the Michigan State Highway Department in its design, location and traffic staffs almost continuously since 1933, has been appointed to direct the department's postwar planning activities.

Ralph W. Snell, Winston-Salem, N. C., has been named superintendent of parks of Wilmington, N. C. He was formerly with U. S. Corps of Engineers as landscape engineer at Camp Butner, Durham, N. C.

Major L. A. Wilson, area engineer at Greensboro, N. C., for the Office of United States Engineers, Wilmington, N. C., District, has been named assistant to the district engineer at Wilmington. Prior to being made area engineer at Greensboro, Major Wilson served as area engineer at Seymour Johnson Field, Goldsboro, N. C., and at Fort George Meade, Md.

The appointment of **W. W. Hurlbut** as chief engineer of waterworks and **R. R. Robertson** as chief electrical engineer was recently announced by H. A. Van Norman, manager of the City of Los Angeles' Department of Water and Power. Hurlbut has been with the department for 36 years, while Robertson has served for 31 years.

Named to assist Hurlbut and Robertson were **L. E. Goit**, water distribution engineer, and **C. P. Garmen**, engineer of station design for the electrical system.

A. L. McKay, Montevideo, Minn., county engineer since 1931, has resigned to accept a position with the Minnesota state highway department, where he was employed from 1924 to 1931.

James R. Law, mayor of Madison, Wis., has been appointed chairman of the Wisconsin highway commission by Gov. Goodland, to succeed the late William H. Armstrong, Racine, Wis.

William Cone, Jr., has been appointed Moody County highway superintendent at Flandreau, S. D.

James Lewis Doyle has been appointed chief engineer of the Public Utilities Commission of Ohio to succeed Paul E. Weiland, who became a commissioner earlier this year. Doyle has been with the commission as structural engineer for the past two years.

Col. Early E. Gesler, of Chicago, a graduate of West Point, has been assigned as division engineer of the Middle Atlantic Division and director of the Third Service Command, real estate, repairs and utilities division, at Baltimore, Md. Colonel Gesler, a member of the Engineer Corps, came from Washington, where he served for four years in the office of the Chief of Engineers.

J. Neils Thompson, civil engineering professor at the University of Texas at Austin, has been chosen by the Houston City Council as expert adviser on the soil borings being made at the San Jacinto water supply project dam site.

Lt. Col. William M. Goldston, former district manager at Houston, Tex., for the Austin Bridge Company of Dallas has been made camp commander of Camp Harahan, near New Orleans. Lt. Col. Goldston was educated at the University of Texas and Cumberland University, Lebanon, Tenn.

W. P. Brereton, city engineer of Winnipeg, Man., has announced his retirement next January, having served the city for 30 years.

Robert B. Moore, former engineer, Fort Worth, Tex., regional office of Soil Conservation Service, is now a major in the Army and is stationed at Fort Benning, Ga.

Captain John Strange, Waco, Tex., city engineer of Waco before joining the U. S. Army Engineer Corps, has been promoted to major.

Major H. M. Sparks, of Mitchell, S. D., formerly connected with highway construction and engineering, has been appointed post engineer at Fort Francis E. Warren, near Cheyenne, Wyom. He is a major in the Corps of Engineers of the U. S. Army.

Roy G. Spieker, who has been associated with the Division of Sanitary Engineering of the South Dakota State Board of Health for the past five years, is now a first lieutenant in the Army Sanitary Corps.

The Ohio Public Utilities Commission has announced the appointment of **James Lewis Boyle**, of Columbus, as chief engineer, succeeding **Paul Weiland**, who became a commissioner last February.

Damon Runyan, architectural engineer, formerly of Kansas City, and **Angus E. Slee**, civil engineer, of Longmont, Colo., have formed the firm of Runyan and Slee, Engineers, with home offices in Longmont. They are engaged in utility appraisal for municipalities in the Rocky Mountain States and intend to engage in municipal engineering after the war. They were recently connected with G. Meredith Musick, architect-engineer of Denver, Colo., on Lowry Field and Fitzsimons Hospital in Denver, and on Air Base Construction in Nebraska. Mr. Runyan was formerly with Harrington and Cortelyou, consulting engineers of Kansas City and Smith, Hinchman and Grylls of Detroit. Mr. Slee has been city engineer of Longmont, Colo., for the past eight years.

Project for Ohio River pollution control recommended for Congressional action

Expenditure of $200,000,000 considered necessary to safeguard public water supply and to reclaim streams for recreational purposes. Waste treatment facilities needed in 27 metropolitan areas.

A $200,000,000 project to control pollution in the Ohio River has been recommended to Congress by the Ohio River Committee as a means of safeguarding the public water supply and reclaiming streams in the Ohio River drainage area for recreational purposes.

The project, covering a 15-year period, would be financed over 40 years, with the federal government putting up 35 percent of the cost. Among other things, it calls for the establishment of sewage disposal plants in 27 metropolitan areas, including Cincinnati.

The pollution abatement recommendation was made by the Ohio River Committee and concurred in by the War Department and the Corps of Engineers following a five-year field and laboratory survey of domestic and industrial wastes and acids from mines.

The 27 metropolitan areas designated as places for construction of waste treatment facilities are:

Evansville, Ind.; Ashland, Catlettsburg, Louisville and Owensboro, Ky.; Cincinnati, East Liverpool, Girard, Ironton, Niles, Portsmouth, Sidney, Steubenville, Warren and Youngstown, Ohio; Aliquippa, Ambridge and Pittsburgh, Pa.; Chattanooga, Knoxville and Nashville, Tenn., and Charleston, Elkins, Huntington, Parkersburg, Weirton and Wheeling, W. Va.

Points of most severe pollution are Cincinnati, Louisville, Pittsburgh and stretches of the river between Pittsburgh and Wheeling, and Huntington and Portsmouth.

The three-man Ohio River Committee, appointed by the secretaries of War and Treasury, is composed of an Army engineer, a representative of the Public Health Service and a non-government expert on stream pollution problems.

. . .

Arkansas wants more flood control dams built

Gov. Adkins, many public officials and about 150 residents of eight counties in western Arkansas attended a hearing on Nov. 12 before the United States Army Engineers Board of Rivers and Harbors at Hot Springs. Pleas were made for early construction of the Blakeley Mountain Dam on the upper Ouachita River to prevent flood damage to the ley of that river.

Gov. Adkins said he was "converted the policy of storage reservoirs to prev flood damage, as such hazards will c tinue to exist until reservoirs are stalled and operated.

"The installation of power facil should await the end of the war or least until the critical materials for generators can be spared from the effort.

"I am convinced that the industrial velopment which is potential in Arkan and the electrification of our farms absorb all the power which can be gen ated here if this becomes a dual purp dam.

"I hope this dam is built and opera by the army engineers in whom I ha implicit confidence. I believe their perience in matters of the construct and operation of flood control and pow projects is superior to that of others this field."

The cost of this dam, it is said, wo not exceed $12,500,000.

On November 9, Senator John McC lan of Arkansas, introduced a bill in Senate calling for early completion power, flood-control and navigation pr ects in the Arkansas and White Ri basins as a part of the governmen postwar and employment program. T cost of levees and floodways in the Arka sas River basin was estimated by S ator McClellan at $10,114,000, with co of dams and reservoirs at $122,049,0 Costs of levees and floodways in the Wh River basin were set at $14,237,900 a the dams and reservoirs at $115,564,0

Fall surface and ground water conditions less favorable

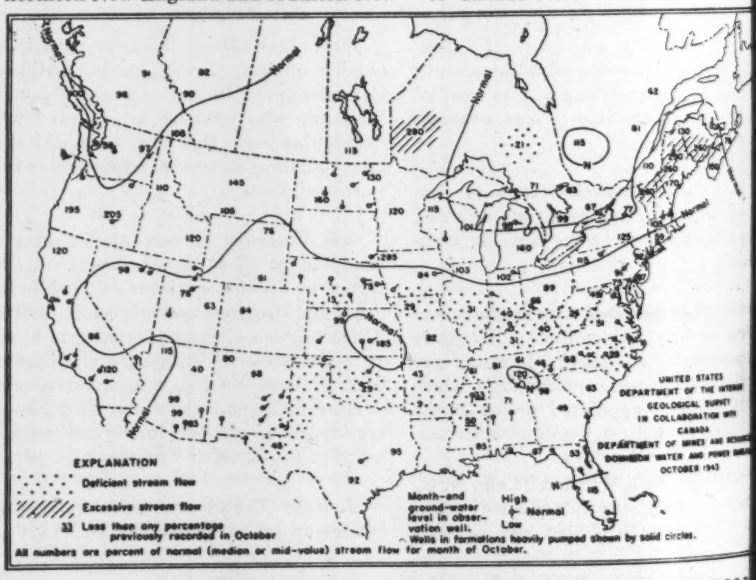
Because of continued widespread deficiencies in rainfall, surface-water, and ground-water conditions are in general less favorable throughout much of the United States and Canada than in the fall of 1942.

East of the Mississippi River, October stream flow averaged 63 percent of normal. Throughout the south central and southern Rocky Mountain states stream flow also continued subnormal, with but little change from September.

Drought was prevalent and surface-water supplies critical in the Ohio River basin, eastern North Carolina, Mississippi, Arkansas, Oklahoma, and West Texas.

During October an area of subnormal stream flow developed in eastern Ontario and Quebec.

Throughout most of New England, central and southern New York, southern Michigan, and generally throughout the upper Mississippi and Missouri Valleys, northern Mountain States, Pacific Coast States, British Columbia, and Alberta, stream flow continues near normal or above. Stream flow was excessive in northern New England and southern New Brunswick. No floods of consequen have been reported in the United Sta or Canada for two months.



MEN AT WORK

MAJ. ROSS A. THUMA was recently appointed post engineer at Fort Des Moines, Ia. In the first World War he was a first lieutenant in the sanitary corps at Washington, D. C. He is a chemical and waterworks engineer.

LIEUT. COL. ROBERT F. METCALFE who recently retired as post engineer at Fort Des Moines, began his military career in 1902 in the Florida National Guard. He also fought overseas in the first World War.

R. L. Malcolm is bridge superintendent on a job for W. L. & E. L. Cobb contractors, Montgomery, Ala., who hold the contract for highway relocation project occasioned by the expansion of Maxwell Field at Montgomery.

Engineering work on the new MacArthur Lock at Sault Ste. Marie, Mich. was supervised by BERT G. McCARTHY as assistant project engineer (left) and HERMAN F. ROOK as project engineer (right). Upon completion of the lock, which was built in 14 months under the authority of the Corps of Engineers, U. S. Army, at a cost of $14,000,000, McCarthy was promoted to project engineer and Rook to area engineer.

Oldtimers with Public Roads Administration are the above three men employed in the Boston, Mass., field office. J. J. CUMMINGS (left) and C. J. D'AMATO (center), are associate highway engineers; and LEO GROSSMAN (right) is highway engineer.

WASHINGTON HIGHLIGHTS

The Bureau of Reclamation has awarded the contract for earth work, construction of a pipeline, and structures for laterals and for diversion channels for the Roza Division of the Yakima Project in the state of Washington, to the Murphy-Campbell Co., Seattle, on its low bid of $71,658. The next lowest bid of the nine received was but $7.80 higher.

Engineers and construction men are among those for whom Liberty Ships are being named. A ship under construction at the California Shipbuilding Corp. yard, Wilmington, will bear the name of John A. Roebling, who came to America in 1831 and manufactured the first wire rope in this country. Two famous suspension bridges on which he used wire rope are the Brooklyn Bridge and the railroad suspension bridge at Niagara Falls. Liberty Ships being constructed at Bethlehem-Fairfield Shipyard, Inc., Baltimore, Md., will be given names including those of Israel J. Merritt and Francis C. Harrington. Merritt, one of the founders of Merritt, Chapman & Scott, was a pioneer in ship salvage. Among other salvage jobs, he raised the battleship USS Maine at Havana, Cuba, in 1898. He died in 1911. Harrington, who was serving as administrator of the Works Projects Administration at the time of his death in 1940, had a long and varied military career, including commander of the 215th Engineers during the first World War.

Engineers retired from federal service can be hired as consultants by the Secretary of the Interior to work on reclamation jobs without loss of retirement compensation, nor the necessity for redetermination of retirement status, under provisions of a bill (S. 1456) now before Congress. According to the Bureau of Reclamation, the measure is not intended to anticipate the retirement of any individual engineers, but it is believed that by assuring retired engineers that reemployment would not affect their retirement compensation or status the act would be of benefit both to them and the government.

Latest increases in prices for construction materials include jumps from one to ten dollars per 1,000 b. ft. of hardwood lumber produced in the South Central region, and a three percent increase over October, 1941, prices for millwork specialties made of western and northern pine lumber. The hardwood lumber effected comes from Missouri, southern Illinois, southwestern Kentucky, and central Tennessee. The new prices, which represent an average increase of 11 percent over those of October, 1941, carry through from producer to retailer, and effect 9.3 percent of the total hardwood production in the United States, but less than 1.8 percent of all lumber produced.

Specific maximum prices for vitrified clay sewer pipe and allied products have been set by OPA for the West Central, South Central, Rocky Mountain and Pacific areas, where formula prices heretofore prevailed. Ceiling prices were already in effect for the Eastern, Southern and East Central areas. Prices established are the highest prices prevailing in each area the first half of October, 1941.

For the first time, the War Production Board has provided that, effective the first quarter of 1944, controlled materials allotted to claimant agencies for construction and facilities can be used for no other purpose. Previously, an agency, after being once allotted its quarterly share, could use it for any of its approved programs. In order to carry out the new provision, WPB will set up, under its requirements committee, a central materials reserve, to be administered by the facilities bureau.

J. A. Krug, program vice-chairman of WPB, has announced that maximum quantities of controlled materials will be ear-marked for each claimant agency, including firm allotments for approved programs and a modest allowance for miscellaneous non-programmed requirements. The central reserve will exceed the aggregate ear-marked quantities by an amount calculated to satisfy emergency requirements. No claimant agency's share will be transferred to another agency without the first agency's approval. The facilities committee must approve, in advance, allotments from the non-ear-marked portion of the reserve.

The Petroleum Administrator for War has issued a new form, designated as PAW Form 30, by use of which it will be possible to obtain priority assistance and use-authorization for refinery construction more quickly than in the past. It is estimated that use of the new form will save about 7 days processing time.

Installation of an additional generator, rated at more than 100,000 kw., at Grand Coulee Dam in the state of Washington, as announced by Secretary of the Interior Harold L. Ickes Nov. 9, brings installed capacity of the plant to more than 700,000 kw., practically all of which is being transmitted to war plants. There are now seven generators at the plant, whose capacity is exceeded by that of only one other hydro-electric plant in this country, that at Boulder Dam.

The Grand Coulee Dam is the key structure of the Columbia Basin project which, in addition to producing po is designed to irrigate 1,200,000 acre land. Though construction of the irr tion features has been interrupted the war, studies are being continued designs of the canal and its lateral tems, according to Harry W. Bash commissioner of reclamation, as fast funds and personnel will permit. It not been determined whether constr tion will get under way as a war- measure, or whether it will have to until after the close of the war.

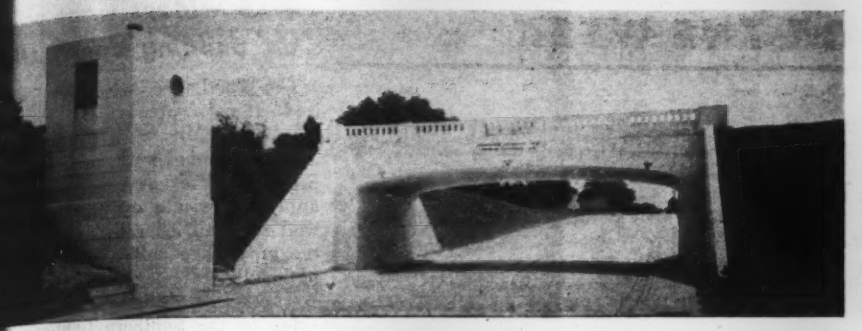
Because of the scarcity of high-pr sure, wire-braided hose, which is used equipping such types of construct equipment as bulldozers, cranes shovels, the War Production Board obtained the cooperation of four ad tional manufacturing companies in creasing output, and also is expected provide that hereafter the hose shall distributed only by means of allocat to the various claimant agencies. directive to this effect, which proba will be issued soon, is expected to go effect Dec. 1.

Even under these improved conditio it is expected that production will meet requirements before next July. T present shortage in this type of wi braided hose is set at 30,000 ft.

Though the 30,000-ft. shortage is four percent of total production, it been sufficient to delay delivery of co struction equipment. Present month production of the hose is 500,000 ft. the two-wire, and 250,000 ft. of sing wire type, which gives a total of 750,0 ft. as against 780,000 ft. needed to m requirements.

An increase of approximately 8 p cent in ceiling prices for all grades a sizes of red cedar shingles, effective N 1, replaces an earlier provision by Office of Price Administration that sh shingles be made on an adjustable pr basis. OPA also revoked a 10 perc increase over old ceilings which sell had charged on sales in amounts of squares of shingles not intended re-sale.

The government's newest prize fi called the "Tanker Champ," has be devised by the Maritime Commission, a the first award goes to the Kaiser co pany's Swan Island Shipyard at Po land, Oregon. Admiral Howard L. Vi ery, vice chairman of the Maritim Commission, in announcing the awa said that it is made "in recognition your having achieved the highest p ductivity per way of any American shi yard engaged in tanker construction the month of September." The Kais yard will fly the flag for a period thirty days, or longer, if no other y by the end of that time has bettered record in tanker construction.



Fairbanks, Morse & Co. Photo

Florida eliminates another grade crossing

Motorists on U. S. Route 90, the Old Spanish Trail, need no longer "stop, look and listen" at the crossing of the Louisville & Nashville railway in Cottondale, Fla., for an attractive new concrete rigid frame underpass, built by the Florida State Road Department, now carries traffic under the tracks. Located in flat country, the highway has to dip beneath the railway to provide the necessary 14 ft. 4½ in. center clearance, and the dip necessitates the use of a pumping plant to drain the roadway in rainy weather. Installed in a pumphouse, of similar architecture to that of the bridge, are two 8-in. vertical centrifugal pumps, driven by 20 hp. 900 rpm. vertical ball bearing motors. One pump, as shown in the right photo, is also connected to a gasoline engine for use in case of electric power failure. Each pump unit is designed to deliver 2,500 gpm, against a 17-ft. head.

BRIEF NEWS

orman D. Wilson, of Wilson and Bun-, Toronto, Ont., has been named con-ng engineer for investigation and re- upon Toronto's long discussed sub- system for the relief of street railway ic in the central part of the city. treet railway traffic is handled by the icly owned Toronto Transportation mission, of which H. C. Patten is ral manager and H. W. Tate assistant ral manager in charge of engineer- The subway scheme proposed and being considered as a postwar meas- is estimated to cost $42,000,000, or 00,000 per mile of completed subway.

e state of Arkansas has accepted 00,000 in war bonds in settlement of petition for partial disbursement of 22,000 government funds deposited he United States District Court at Smith, Ark., to pay for damages to nsas roads and bridges flooded as a lt of construction of the Norfork dam.

lvin C. Bromm, who went to Milwau- Wis., from Cincinnati, Ohio, as city director, proposes to revise com- ly the Milwaukee zoning ordinance liminate many blighted areas and an supply of commercial and light manu- uring areas which make it necessary many families to live outside the city s.

e war construction program for the sas City District, Missouri River Di- n of the U. S. Engineer Department, w nearing completion. Amounting 383,000,000 the work in that district, h comprises Kansas and Missouri, ncluded such projects as internment ps war plants, airfields, hospitals, warehouses, supply depots and army training camps. Despite shortages of material, equipment and manpower, not one of the projects was turned over to the using agency even a day late. Col. R. E. M. Des Islets, district engineer for the Kansas City district of the Seventh Service Command, said:

"This program has been possible only because of the fine American spirit, loyalty, cooperation and ingenuity of the contracting industry, and the suppliers and people living in surrounding communities, all of whom did everything possible to further the war effort."

Completion of a motor truck road over the Blue River route, which would give Edmonton, B. C., direct connection with Vancouver, is planned for this year, J. M. Wardle of Ottawa, director of surveys and the engineering branch of the federal department of mines and resources, said recently. Opening of this road would shorten the route between Edmonton and Vancouver by about 300 miles.

The approval of the War Labor Board a few weeks ago of an increase in the wages of Houston bricklayers from $1.62½ to $1.72½ an hour makes the Houston bricklayers the highest paid building craftsmen in Texas. The approval of the increase confirmed a wage adjustment board decision of months ago. The increased wage has been paid in Houston since last March.

A break in the main feeder gas pipe line of the People's Gas Company, three miles from Port Arthur, Tex., recently caused the line to contort and break. It was remedied by the laying of 3½ miles of pipe to bypass the break and connect with another line. This was done in 16 hours, during which time Port Arthur was without gas. The rupture was caused by flood conditions following the July gulf hurricane and flood.

The Charter Oak toll bridge, over the Connecticut River between Hartford and East Hartford, Conn., opened Sept. 5, 1942, was used by nearly two million vehicles in its first year of operation, according to William B. Griffin, bridge manager. The number of vehicles using the bridge reached the two million mark about September 14 of this year. Hartford residents do not use the bridge to any great extent because of the difficulty of getting to it. Approval is being sought for the construction of better approaches on the Hartford side.

About $500,000 will be spent in resurfacing state highways in South Georgia during fall months. Director Ryburn Clay of the state highway department announced Oct. 11. This $500,000 will bring the total amount for maintenance under present administration to $2,500,000. Director Clay said—almost twice as much as during any of the three previous years.

"Little Inch," pipeline is fast taking shape across Ohio. Crews of workmen engaged in laying this 20-in. pipeline from Beaumont, Tex., to terminals in the New York-Philadelphia area, are on the job 10 hours a day, seven days a week, rushing to completion this 1,253-mile pipeline. When completed in a few months, it will carry 235,000 bbl. of oil or gasoline daily as compared with the 300,000 bbl. of crude oil carried by the "Big Inch" finished last July.

The two lines are parallel on a 50-ft. right-of-way across the country. "Little Inch" was designed primarily for carrying gasoline to the Eastern seaboard, but may at times transport fuel or crude oil. "Big Inch" carries crude oil only to Eastern refineries.

JOBS OF THE WEEK

AUXILIARY AIR STATION, Fallon, Neb.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded a contract for the development of an auxiliary air field, to Dinwiddie Construction Co., San Francisco, Calif., at $1,108,200.

HOUSING, Long Beach, Calif.

Public Housing Authority, San Francisco, Calif., awarded a contract for constructing 300 temporary dwelling units, to James I. Barnes Construction Co., Santa Monica, at $360,000. Marsh, Smith & Powell, Los Angeles, are the architects.

HOUSING, Los Angeles, Calif.

Housing Authority of Los Angeles, Los Angeles, Calif., awarded a contract for 500 family housing units, to Zoss Construction Co., Los Angeles, at $959,000. Allen and W. G. Lutzi, Los Angeles, Calif., are the architects. NHA will finance.

HOUSING, Los Angeles, Calif.

Housing Authority of Los Angeles County, Calif., will construct 300 temporary dwellings at Palm Homes Housing. E. P. Dentzel and George H. Whyte, Alhambra, are contractors and the work will cost $539,367. Willowbrook Housing Architects (S. E. Lunden, Teho; Criley, Graham, Latta and Paul Hunter, Los Angeles) are the architects.

MILITARY INSTALLATION, Ohio

U. S. Engineers, Wright Field, awarded a contract to Corbetta Construction Co., New York, N. Y. The estimated cost is $1,700,000. The work consists of a military installation in Montgomery County.

SYNTHETIC RUBBER PLANT, Alabama

George A. Fuller Co., Chicago, Ill., has been awarded a contract for the construction of a synthetic rubber plant for Goodyear Tire & Rubber Co., Akron, O. The estimated cost is $3,000,000. Robert & Co., Atlanta, Ga., are the engineers.

FACTORY, Virginia

E. I. du Pont de Nemours & Co., Wilmington, Del., awarded a contract for the construction of a factory to make "cordure" to Laburnum Construction Corp., Richmond, Va., and to Riggs Distler & Co., Inc., Baltimore, Md. The estimated cost is $2,750,000. Defense Plant Corp. will finance.

HOUSING, Long Beach, Calif.

William C. Crowell Co., Pasadena, Calif., has been awarded a contract for 400 temporary dwelling units at Cabrillo Homes, by Public Housing Authority, San Francisco, Calif., at $714,000. Reichard & Adams, Glendale, are the architects.

HOUSING, Long Beach, Calif.

Public Housing Authority, San Francisco, Calif., awarded a contract for 300 temporary dwelling units to E. A. Kaiser Co., Beverly Hills, at $549,549. Flewelling & Harrison, Los Angeles, are the architects. Gerald Fitzgerald, Los Angeles, Calif., is the engineer.

HOUSING PROJECT, Cleveland, O.

Public Housing Authority, Cleveland, O., received the lowest bid for 400 temporary dwelling units from James McHugh Construction Co., Chicago, Ill., at $1,360,000. Garfield, Harris, Robinson & Schafer, Cleveland, O., are the architects.

HOSPITAL, Downey, Ill.

Veterans Administration, Washington, D. C., received the lowest bid from Peter Hamlin Construction Co., Chicago, Ill., at $1,163,434 for building and facilities at U. S. Veterans' hospital.

POWDER PLANT, Kansas

U. S. Engineers, Kansas City, Mo., awarded a contract to William S. Lozier, Inc., Rochester, N. Y., and to Broderick & Gorden, Denver, Colo., for a plant to manufacture powder, the cost to exceed $13,000,000. Hercules Powder Company will operate.

HOUSING, Galveston, Tex.

Knutson Construction Co., Houston, Tex., was the lowest bidder at $1,127,000, for 500 family dwelling units, when Public Housing Authority, Fort Worth, opened bids. Rapp, Stafford & Barthelme, Houston, are the architects.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 14.

WLB widens wage poli on building constructi

The War Labor Board recently au ized extension of wage rates ordere the Wage Adjustment Board for h ing construction work on certain fe projects in the Las Vegas, Nev., are apply to private construction wor well as to all federally financed wor the area. The policy is now applic nationally.

The WLB's decision grew out of a tition by the Southern California C ter of the Associated General Con tors, protesting an order of the W Adjustment Board, which, on July 1943, directed increases of from 4½ 22½ c. per hour for 28 classification labor, and denied increases for a 130 other classifications. The effec the increases, it was maintained, wa unsettle labor conditions in the area cause it applied only to certain fe projects. The unions involved in the joined in this criticism.

In an opinion on the WLB's exte of the new rate to all building proj in the area, George W. Taylor, chairman of the board, described problems in the case as highlighting effect of using wages, without effec controls, to direct the flow of manpow He said further, "The local supply construction workers in the Las Ve area was at most a few hundred and their rates were relatively low. It apparent that the major source of la supply was the nearby area of South California, including Los Angeles, wh rates were comparatively high. In o to induce the necessary migration large number of workers, the wage r at Las Vegas had to be set on a par or higher than Los Angeles." Now, h ever, the demand for manpower in area has considerably lessened, so the increases directed by the Wage justment Board "did not serve to stabi wage rates, but acted to unstabi them," according to Mr. Taylor. problem of stabilizing rates in an after the urgency of war construction passed, is one which will face the struction industry generally, warned Taylor.

In its new definition of policy cove the Wage Adjustment Board, the tional War Labor Board also pointed that no employee or group of emplo is entitled automatically to the full L Steel formula increases. Generally ployees enjoying relatively high rate pay should receive a smaller percent adjustment than those receiving lo rates. In applying the Little Steel mulas to wage rates for a partic craft, some or all of the full 15 per otherwise allowable should be with where allowance of the full amount w have an unstabilizing effect on wage the industry or in the area.

OBITUARY

John Thomas Love, 73, contractor and former Alamance County Commissioner, died at Burlington, N. C., Nov. 10.

Harry M. Bates, 75, general contractor of Steubenville, Ohio, for 50 years, died Nov. 8. He was widely known in that section as a road builder and was prominent in banking and business.

Herbert P. Hayes, 73, died at Kansas City, Mo., on Nov. 14. Until his retirement two years ago, he had been engineer for the Texas highway department at Fort Worth.

Alexander Robert Mann, 82, pioneer railway construction engineer, president of Northern Construction Co., Ltd., Vancouver, B. C., died recently. He built the Columbia & Western Railway in the Kootenay district in 1898 and then went east to Ontario where he did two railway jobs for the C.N.R. until 1903. The next year he formed the Northern Construction Co., which now has offices in Canada and the United States. In the years between the war his company did various jobs for the C.N.R. including work on the line between Edmonton and Vancouver. Major construction jobs in Eastern Canada include the steamship terminal at Three Rivers, Que., the Detroit-Windsor tunnel under the Detroit River, a section of the Welland Canal; and the Wolfe's Cove terminals at Quebec for the Federal Government.

John H. D. Grannis, 72, retired civil engineer, who was one of the builders of the Catskill Aqueduct, and whose four sons are in the United States Army, died Nov. 12.

Maurice E. Bates, 82, nationally known engineer, died at Kansas City, Mo., Nov. He was manager of an engineering firm which built Kansas City's first electric street railway. He was also consulting engineer on the first light plant constructed in the Kansas City territory. Prior to 1887, he was employed by the original Edison power plant in New York.

Thomas Laurence Comyns, 75, retired contractor, and one of the constructors of Treasure Island in San Francisco Bay, died Nov. 3.

Keener Means Allen, 62, civil engineer and architect, died Nov. 5 at North Wilkesboro, N. C. Formerly he was connected with the construction firm of Fosdick and Allen and had drawn plans for and supervised the construction of many public buildings in Wilkes County, N. C.

George Van Derhoes, 78, consulting engineer and former associate of Thomas A. Edison, died Oct. 23, at South Bend, Ind.

J. H. Walsh, 76, retired division superintendent of the Southern Pacific lines at Austin, Tex., died there Oct. 19. Mr. Walsh began his railroad career at 13 years of age on the construction gang of the Union Pacific at Deadwood, N. D.

William J. Way, 83, associated, until his retirement in 1935, with the late Kenneth Way, his son, in the Way Engineering Company of Dallas and San Antonio, Tex., died in Houston, Nov. 2.

Tyler Elmer Sledd, 68, a widely known building contractor, who was a native of Floyd county, Va., died Nov. 6.

Alfred R. Lazenby, 76, building inspector at Salisbury, N. C., died Nov. 14. He had been a building contractor for over 42 years, having supervised the construction of many college, hospital and hotel buildings in the Salisbury area.

G. L. Hannaman, 62, widely known western construction engineer, died at Portland, Ore., Nov. 10. Member of the firm of Viesko & Hannaman, he was in charge of construction of the Salem, Ore., high school building, the old Salem postoffice and several Salem industrial plants. He organized the firm in 1937 after working for construction companies in California and Iowa.

Harry O. Hartwell, 55, for many years a contractor at Bedford, Mass., and its former road commissioner, died recently.

CONTRACTS AND CAPITAL

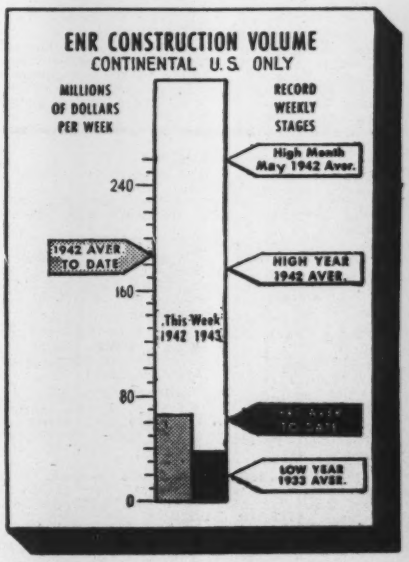
CIVIL ENGINEERING construction volume in continental U. S. for the short week due to the Thanksgiving Day holiday totals $36,523,000. This volume, not including the construction by military engineers abroad, American contracts outside the country, and shipbuilding, is 45 percent below the total for the corresponding 1942 week, and compares with $68,931,000 reported for the preceding week.

Public construction is 38 percent lower than in the week last year as both state and municipal work and federal volume report decreases. Private construction declines 85 percent from a year ago.

The current week's volume brings 1943 construction to $2,885,384,000, an average of $61,391,000 for each of the 47 weeks of the period. On the weekly average basis, 1943 construction is 67 percent below the $8,932,207,000 for the 48-week 1942 period. Private construction, $450,099,000, is 15 percent under last year, and public construction, $2,435,285,000, is down 70 percent when adjusted for the difference in the number of weeks.

In the classified construction groups, gains over the 1942 week are in waterworks, bridges, and earthwork and drainage. Increases over the preceding week are in waterworks, bridges, and public buildings.

New capital for construction purposes for the week totals $7,005,000. It is made up of $4,000,000 in corporate security issues, and $3,005,000 in state and municipal bond sales. New construction financing for the 47 weeks of 1943, $3,065,104,000, is 69 percent below the $10,204,255,000 reported for the 48-week period in 1942.



CONTRACTS

Continental U. S. Only
(Thousands of dollars)

	Week Ending Nov. 26 1942	Nov. 18 1943	Nov. 25 1943
Federal	$53,507	$27,426	$33,637
State & Municipal	3,733	1,599	1,592
Total public	$57,240	$29,025	$35,229
Total private	8,689	39,906	1,294
TOTAL	$65,929	$68,931	$36,523

Cumulative
1943 (47 weeks) $2,885,384
1942 (48 weeks) $8,932,207

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1942 48 weeks	1943 47 weeks
NON-FEDERAL	$625,069	$311,266
Corp. Securities	177,379	22,228
State & Mun	208,535	123,360
R.F.C. loans	156,455	14,545
PFHA loans	.....	3,133
R.E.A. loans	.....	20,000
Fed.-Aid Hwy	82,700	128,000
FEDERAL	$9,579,186	$2,753,838
TOTAL CAPITAL	$10,204,255	$3,065,104

ENR INDEX NUMBERS

Index Base=100		1913	1926
Construction Cost	Nov. '43	294.41	141.52
Building Cost	Nov. '43	231.39	125.08
Volume	Oct. '43	142	62

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, Manager *SCOTT McLEOD, Statistician*
(Daily service also available—Write for details)

WATER SUPPLY

PROPOSED WORK

†New Mexico—U. S. Eng., 4 and Gold Sts., Albuquerque, addnl. water and sewer lines, facilities, Sol. No. W29-005-Eng-44-90, De Baca Co.

†New York—American Aviation Corp., H. Webster, pres., Lock Box, Jamestown, emergency water tank, elevated tower, steel tank at plant. $23,000. Defense Plant Corp. will finance. Beck & Tinkham, Bailey Bldg., Jamestown, engrs.

O., Perry—Village, WW plant. Over $50,000. To be partly financed by Ohio Dpt. P. Wks.

B. C., Saanich (Victoria)—Municipality, E. C. Warren, reeve, made plans water project or sys. $86,000. H. H. Allen, c/o owner, engr. CD 10/22.

Que., Montreal—Montreal Locomotive Works, Ltd., H. Booth, plant supt., 5781 Notre Dame St. E., pump house and locomotive section. $24,000.

BIDS ASKED

Bids Asked November 29

Md., Towson—Comrs. Baltimore Co., Courthouse, installing 7,600 lin. ft. 6- and 8-in. etc. c.i. watermains, appurtenances, Contr. 78-D. Plans deposit $5. Geo. Wm. Stephens, Jr., Courthouse, engr.

Bids Asked November 29

Ont., St. Catherines—D. G. Ure, engr., 24 King St., watermains for Grantham Twp., c/o K. V. Brown, 24 King St.

Bids Asked December 3

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., approx. 365 ft. 6- to 12-in. c.i. watermains, 5,980 ft. 6 and 8 in. vitr. sewers, Contr. No. 168-W & S. Plans deposit $5. H. R. Hall, ch. engr.; adv. ENR 11/25.

Bids Asked December 7

D. C., Wash.—District Comrs., District Bldg., 10 m.g. concrete reservoir, Fort Stanton Park; adv. ENR 11/25. CD 5/18—ENR 5/20.

Bids Asked

†Va., Yorktown—Federal Works Agency, 18 and F Sts. N. W., Wash., 25, D. C., distr. lines, Va. 44-907. $369,600. Newsom & Aldrich, Williamsburg, engrs.

LOW BIDDERS

Ala., Mobile—City, Nov. 12, 20 m.g. raw water reservoir, from F. L. Bray Constr. Co., Battle House, Mobile, **$103,453.** J. B. Converse & Co., Wilson Bldg., engrs.

Tex., Pasadena—Mayor, City Hall, water and sewer imprvs., from H. Nodland, Starbuck, Minn., **$51,111.**

CONTRACTS AWARDED

†California—U. S. Eng., 751 S. Figueroa St., Los Angeles, water resources development, No. 290, San Bernardino Co., to Wonderly Constr. Co., 2695 Lime Ave., Long Beach, **$10,000-$20,000.**

Ga., Augusta—WW, to M. B. Kahn Constr. Co., 714 Lady St., Columbia, S. C., **$110,810.** Robert & Co., Inc., Bona Allen Bldg., Atlanta, engrs.

†Okla., Norman—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., D. C., water supply pipeline, appurtenances, Naval Facilities, NOY 7729, to Asplund & Porr, P. O. Box 988, Enid, **$138,289.**

†Texas—U. S. Eng., Fort Sam Houston, test well, Bell Co., to J. L. Myers & Sons, 206 W. Commerce St., Dallas, approx. **$16,000.** CD 11/15—ENR 11/18.

Tex., Houston—12 in. c.i. mains, Lyon, Bringhurst, Market Sts., etc., to Hake Constr. Co., Commerce Bldg., **$84,743.** CD 9/16—ENR 9/16.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

N. Y., Hempstead—Bd. Supervs. Nassau Co., Franklin Ave., Mineola, bids soon drainage sys. exten. J. G. Guibert, Old Court House, Mineola, engr.

†Tex., Harlingen—H. Ramsey, mayor, City Hall, sewers, Tex. 41-648. $26,000. **FWA.** A. Tamm, Harlingen, engr.

BIDS ASKED

Bids Asked December 1

N. B., Scoudouc (Moncton)—Secy. Dpt. Munitions & Supply, Ottawa, Ont., sewage treatment plant at Repair Depot 4. About $30,000.

Location of ENR Correspondents

Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering News-Record Construction Daily
A-E-M Architect-Engineer-Management type of contract

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Named in order of Listing)

Water Supply	Unclassified
Sewers, Waste Disposal	Latin America
Bridges	Public Buildings
Streets & Roads	Commercial Buildings
Earthwork, Waterways	Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads):

BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Note: To comply with censorship requirements, addresses on some reports are being generalized. Data which would reveal the purpose of the improvements and the size are withheld. The name of contractor and general area are reported.

Bids Asked December 2

Ont., Picton—Secy. Dpt. Munitions & Supply, Ottawa, sewage disposal plant at No. 31, Bombing and Gunnery School for Dpt. National Defense (Air) Ottawa. Est. about $30,000.

Bids Asked December 3

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., 2,855 ft. 8- to 15-in. vitr. sewers, Contr. 169-S. Plans deposit $5. H. R. Hall, ch. engr.; adv. ENR 11/25.

Bids Asked December 6

†Tex., Texas City—Mayor, City Hall, sewer imprvs., Tex. 41-640, $39,267. **FWA.** Plans deposit $25. J. J. Rady, Insurance Bldg., Fort Worth, engr. CD 10/14—ENR 10/21.

Bids Asked

†Massachusetts—U. S. Eng., 31 St. James Ave., Boston, (selected list bidders), sewerage sys., No. 19-023-44-Neg 119, Essex Co. $6,000.

LOW BIDDERS

†Tex., Pasadena — City, c/o mayor, City Hall, sewer and water imprvs., Tex. 41-918-F, from Russ Mitchell, Inc., 2302 Jefferson St., Houston, **$193,818. FWA.**

†Tex., West Columbia—W. M. Greenwood, mayor, City Hall, sewer imprvs., Tex. 41-606, from Jim Handley, Inc., 720 Travis Bldg., Antonio, **$55,754. FWA.** Garrett Engr. Co., Milam St., Houston, engrs. CD 10/27—11/4.

†Va., Norfolk—Municipal Director P. W. Nov. 4, 13,200 ft. sewer force main, Va. 44-from Lock Joint Pipe Co., Ampere, N. **$102,400.** Est. $105,000. **FWA.** CD 11/4.

CONTRACTS AWARDED

†Calif., Corona—Yards & Docks, Navy D. 18 St. and Constitution Ave. N. W. Wash. D. C., incinerator, Naval Hospital, NOY 7 to William Simpson Constr. Co., 816 W. 5 Los Angeles. **$25,000.**

Calif., San Diego—Sanitary Encanto, Sew to J. S Barrett, 1300 Ocean Hy., Ne Beach, **$124,002.** CD 9/27—ENR 9/30.

†Massachusetts—U. S. Eng., 819 Indust Trust Bldg., Providence, R. I., drainage w addnl. facilities, No. 44/55, Franklin Co. Central Constr. Co., Beacon Ave., Lawr Est. under **$50,000.** Bids 11/5.

†Mo., Wellston (St. Louis P. O.)—C Sewer Dist., c/o O. H. Stotkoe, pres. Bd. Tr tees, 6313 St. Louis Ave., St. Louis Co. pleting sewerage sys., to R. W. George Co., 107 N. 7 St., St. Louis, Zone 1, **$10 FWA.** Bids 11/13. CD 10/5—ENR 10/7.

Ont., Guelph—Dpt. National Defense for Ottawa, sewage disposal sys. at W School, to Sterling Constr. Co. Ltd., Sandwich St. E., Windsor, about **$30,**

Que., Granby—Province of Quebec, Q City, drainage scheme at Fly Brook W Course, day labor. **$25,000.** Dpt. P. W Quebec City, engr.

BRIDGES

PROPOSED WORK

Ont., Cornwall—Can. Cottons, Ltd., Corn bridge over drive. $30,000.

Que., Rock Forest—J. Ledoux, municipa clk., bridge over Golconder River. $25,000. P. Wks., Quebec City, engr.

Quebec—Province of Quebec, c/o Min of Colonization, Quebec City, bridges, $100, imprvs., maintenance bridges $135,000.

BIDS ASKED

Bids Asked December 6

Connecticut—W. J. Cox, comr. State Dpt., Hartford, removal of superstruc 1,423 ft. Old Hy. Bridge over Thames R Towns of Groton and New London; adv. 11/25.

LOW BIDDERS

†District of Columbia and Maryland—P Roads Admin., 1440 Columbia Pike, Arlin Va., Nov. 16, Project A-2, Military Hy. of Columbia to Camp Springs, bridge a Nichols Ave., from E. L. North, West Ha ton Beach, N. Y., **$114,936.**

Michigan—State Hy. Dpt. Lansing, Oct. 2 grade separations (hy. underpasses) at troit Terminal R.R. and Ford Blast Furn Lead Tracks crossings over Detroit Indust Expressway, SN-U-FX5 of 82-22-10C-2 and U-FX6 of 82-22-10C-2, Wayne Co., from D & Armstrong, 2041 Fenkell Ave., Detroit, **232. (Correction**—contractors name and pri CD 10/27—ENR 10/4, under LB.

CONTRACTS AWARDED

Washington—State Hy. Dpt., Olympia, ft. rein.-con. overcrossing structure, Le Co., to E. McKeller, Kirkland, **$33,778.** 11/16. CD 11/4.

STREETS AND ROADS

BIDS ASKED

Bids Asked December 9

California—State Div. Hys., State Bld Los Angeles, grading, plant mix surfacing mi. between concrete ship constructors Y and National Ave. via 19 St., McKinley A and 13 St., in National City, San Diego G. T. McCoy, Sacramento, state hy. engr.

LOW BIDDERS

†California—U. S. Eng., 751 S. Figueroa Los Angeles, Zone 14, Nov. 12, access roa parking area, resurfacing, etc., No. 288, Sa Barbara Co., from L. A. Brisco, P. O. B 656, Arroyo Grande, **$40,000-$50,000.**

California — State Hy. Dpt., Los Ange Nov. 12, imprv. 4 mi. San Bernardino C from Lewis Constr. Co., 214 S. Vermont A Los Angeles, **$91,651*****4.1 mi. Ventura C from G. W. Ellis, 8240 Lankershim Blv North Hollywood, **$58,935*****3.3 mi. Ora